What is claimed is:

1. A method of controlling birefringence in a rib waveguide structure manufactured in silicon, the rib waveguide structure comprising an elongated rib element having an upper face and two side faces, the method including:

providing a layer of thermal oxide to a predetermined thickness on said upper face and side faces of at least a portion of said elongated rib element.

2. A method according to claim 1, including providing a layer of thermal oxide on the upper face and side faces of a portion of the elongated rib element, the thickness of the thermal oxide layer and the length of the portion of the elongated rib element over which it is formed selected so as to substantially eliminate birefringence in the waveguide structure.

3. Use of a layer of thermal oxide in a method of fabricating a rib waveguide structure in silicon to control birefringence by forming said layer to a predetermined thickness on at least a portion of said rib waveguide structure.

4. A method of manufacturing a silicon rib waveguide structure comprising:

forming an elongated rib element in a silicon substrate, the elongated rib element having an upper face and two side faces; and

providing a layer of thermal oxide to a predetermined thickness on said upper face and side faces on at least a portion of said elongated rib element, the predetermined thickness being selected such as to control birefringence in the rib waveguide structure.

5. A method of manufacturing a silicon rib waveguide structure, the method comprising:

forming a plurality of optical components in a silicon substrate, said optical components including at least one elongate rib element having an upper face and two side faces;

growing a layer of thermal oxide on said plurality of optical components;

selectively etching the oxide layer from one or a set of said optical components, but retaining the thermal oxide layer over said at least elongate rib element at least in a portion thereof, wherein the thickness of the layer of thermal oxide is selected to control birefringence in the elongate rib element.

6. An interferometric optic device including at least two rib waveguides structures manufactured in silicon and having different path lengths and inherent birefringences, each rib waveguide structure comprising an elongated rib element having an upper face and two side faces, wherein a layer of thermal oxide is provided on at least a portion of at least one of the two elongated rib elements so as to substantially equalize the birefringence of the two rib waveguide structures.

7. An optic device including an array waveguide grating comprising an array of rib waveguide structures manufactured in silicon and having different path lengths and different inherent birefringences, each rib waveguide structure comprising an elongated rib element having an upper face and two side faces, wherein a layer of thermal oxide is provided on the upper and side faces of at least a portion of at least some of the elongated

rib elements so as to substantially equalize the birefringence of each of the rib waveguide structures.

8. Use of a layer of thermal oxide in a method of fabricating an arrayed waveguide grating comprising an array of rib waveguide structures in silicon to control birefringence by forming said layer to a predetermined thickness on at least a portion of at least some of said rib waveguide structures.

9. A method of manufacturing an arrayed waveguided grating comprising an array of silicon rib waveguide structures comprising:

forming an array of elongated rib elements in a silicon substrate, each elongated rib element having an upper face and two side faces; and

providing a layer of thermal oxide to a predetermined thickness on the upper and side faces of at least a portion of at least some of said elongated rib elements, the predetermined thickness being selected such as to control birefringence in the arrayed waveguide grating.

10. A method according to claim 9 wherein the array of rib waveguide structures are formed by forming an array of elongate trenches extending below a surface of the silicon substrate, the side walls of the trenches defining the side faces of the elongate rib elements, and the upper faces of the elongated rib elements coinciding with said surface of the silicon substrate.

11. A method of manufacturing an integrated optical device, the method comprising:

forming a plurality of optical components in a silicon substrate, said optical components including an arrayed waveguide grating comprising an array of elongate rib elements, each having an upper face and two side faces;

growing a layer of thermal oxide over said plurality of optical components; and

selectively etching the oxide layer from one or a set of said optical components, but retaining the thermal oxide layer over said array of elongate rib elements at least in a portion thereof, wherein the thickness of the layer of thermal oxide is selected to control birefringence in the array of elongate rib elements.

12. An integrated optical device, comprising a plurality of optical components formed in a silicon substrate, said optical components including an arrayed waveguide grating comprising an array of elongate rib elements, each having an upper face and two side faces; and a layer of thermal oxide on at least a portion of said array of elongate rib elements, the thickness of the layer of thermal oxide being selected to control birefringence in the array of elongate rib elements; wherein at least one of the plurality of optical components is exposed through the thermal oxide layer.